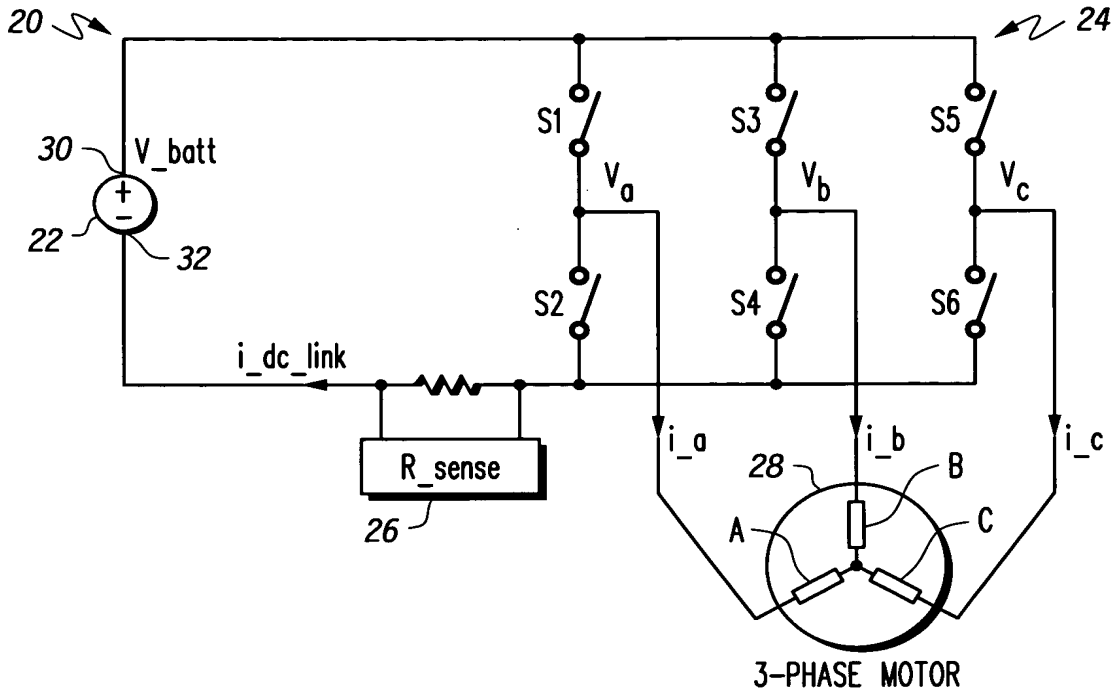
20
24
30
V_batt
22
32
S1
S3
S5
S2
S4
S6
V_a
V_b
V_c
i_dc_link
R_sense
26
i_a
i_b
i_c
28
A
B
C
3-PHASE MOTOR

FIG. 1

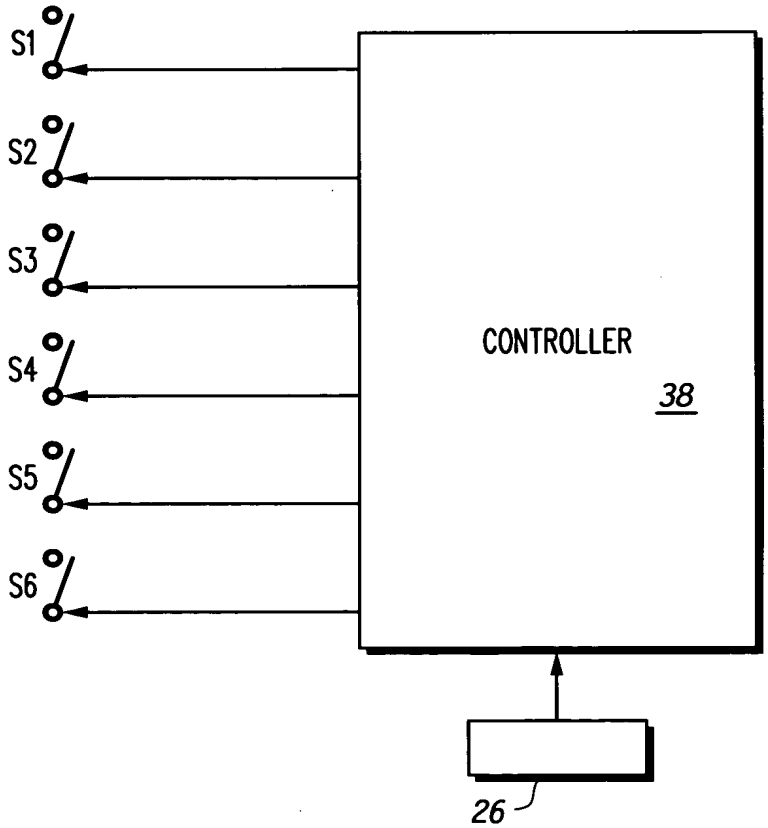
S1
S2
S3
S4
S5
S6
CONTROLLER
38
26

FIG. 2

40 S1, S2	42 S3, S4	44 S5, S6	46 i_dc_link	48 VECTOR
S1 = CLOSED S2 = OPEN	S3 = OPEN S4 = CLOSED	S5 = OPEN S6 = CLOSED	i_a	V1
S1 = CLOSED S2 = OPEN	S3 = CLOSED S4 = OPEN	S5 = OPEN S6 = CLOSED	−i_c	V2
S1 = OPEN S2 = CLOSED	S3 = CLOSED S4 = OPEN	S5 = OPEN S6 = CLOSED	i_b	V3
S1 = OPEN S2 = CLOSED	S3 = CLOSED S4 = OPEN	S5 = CLOSED S6 = OPEN	−i_a	V4
S1 = OPEN S2 = CLOSED	S3 = OPEN S4 = CLOSED	S5 = CLOSED S6 = OPEN	i_c	V5
S1 = CLOSED S2 = OPEN	S3 = OPEN S4 = CLOSED	S5 = CLOSED S6 = OPEN	−i_b	V6
S1 = CLOSED S2 = OPEN	S3 = CLOSED S4 = OPEN	S5 = CLOSED S6 = OPEN	i_0 offset	V0
S1 = OPEN S2 = CLOSED	S3 = OPEN S4 = CLOSED	S5 = OPEN S6 = CLOSED	i_0 offset	V7

FIG. 3

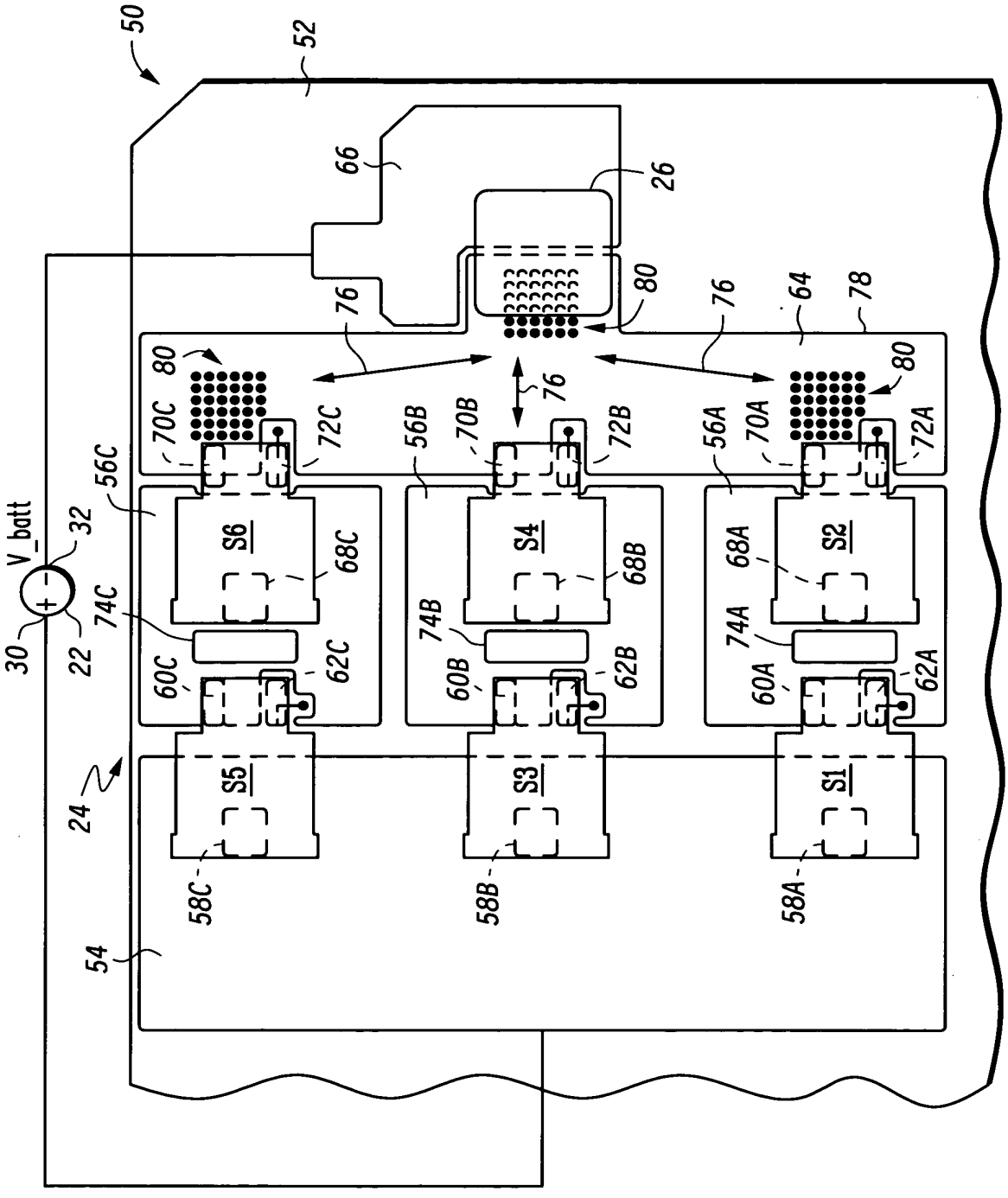
50
52
66
26
80
76
64
78
70C
72C
56B
70B
72B
56A
70A
72A
56C
V_batt
32
30
22
74C
74B
74A
68C
68B
68A
S6
S4
S2
60C
62C
60B
62B
60A
62A
24
S5
S3
S1
58C
58B
58A
54

FIG. 4

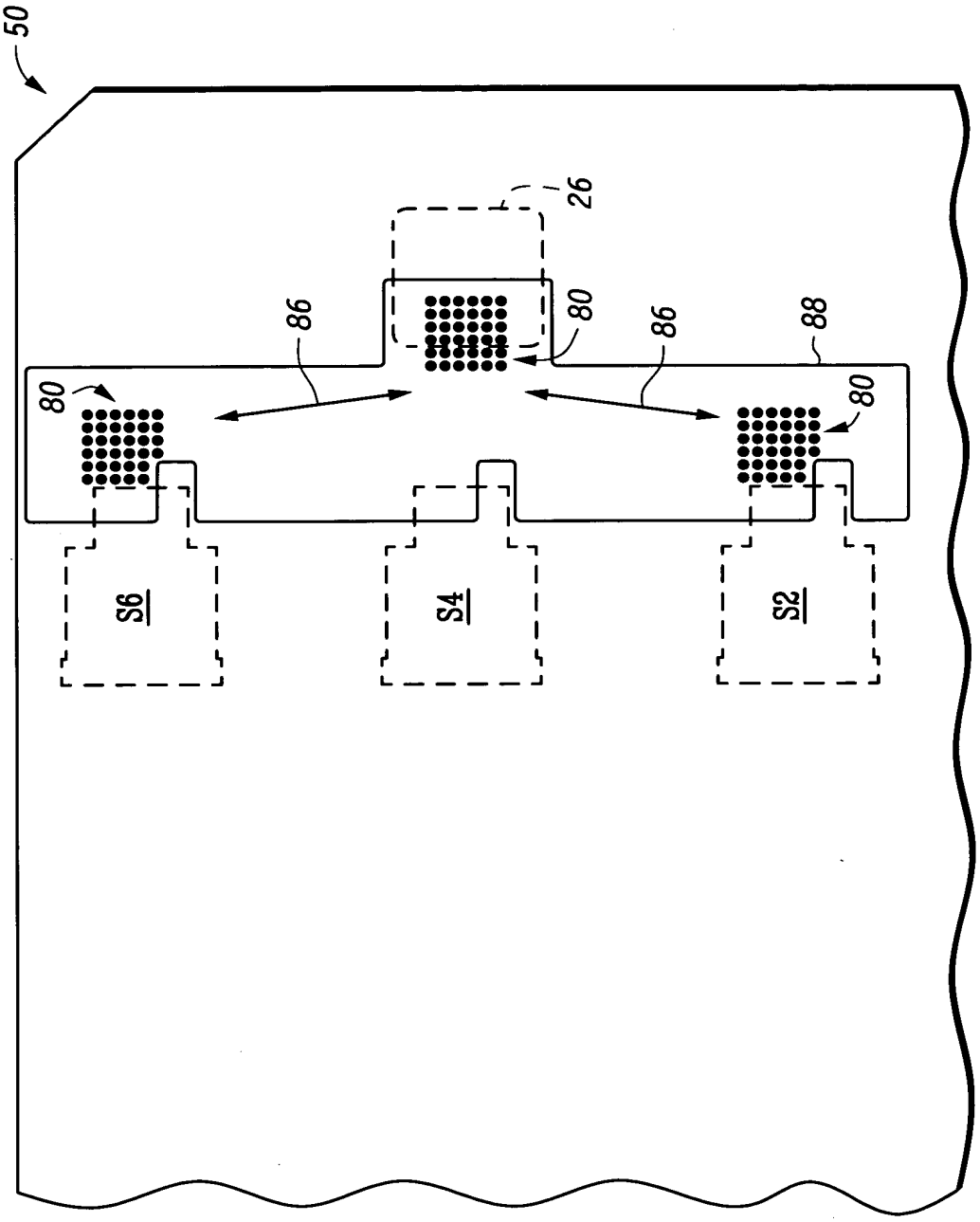

FIG. 5

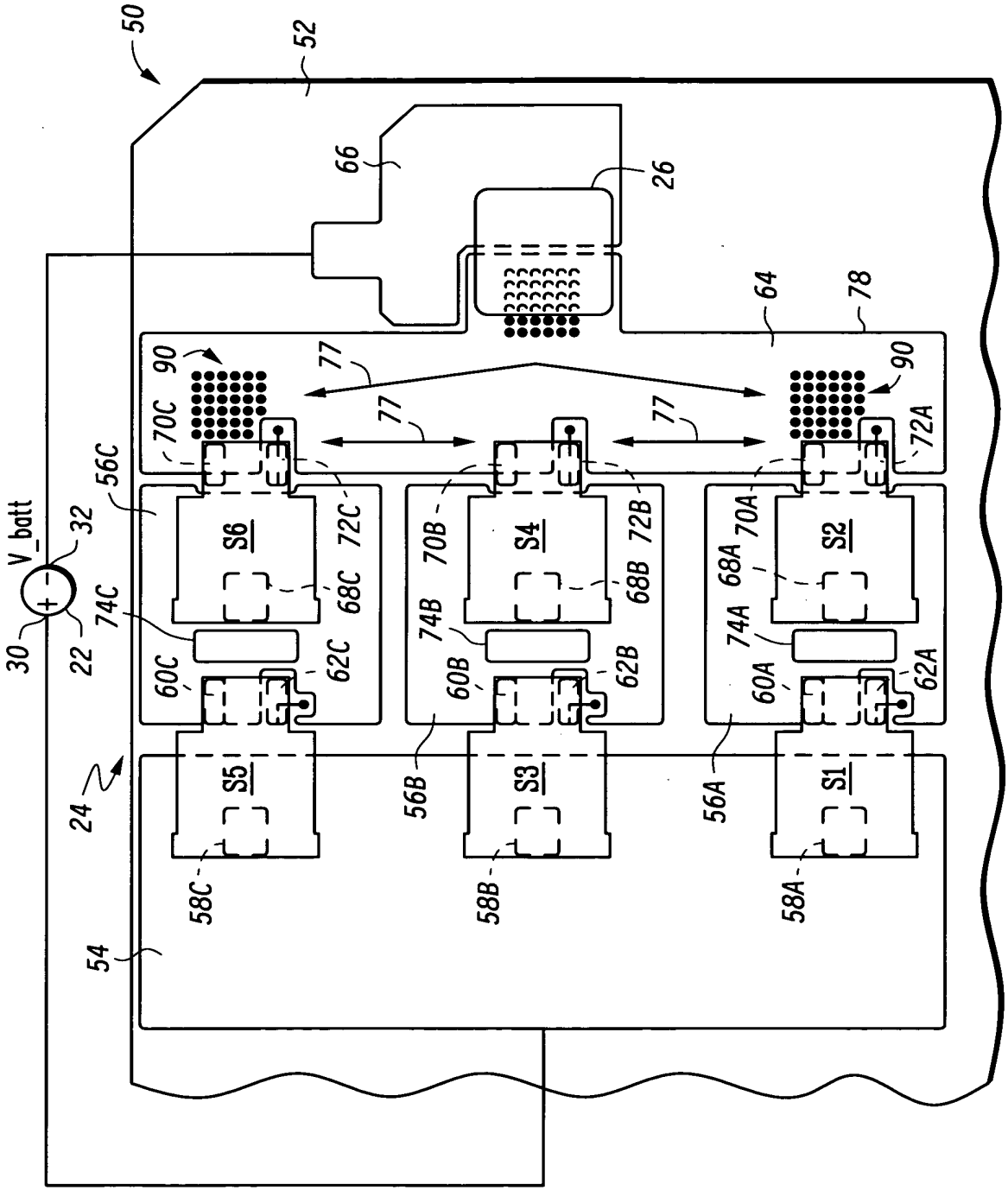
50
52
66
26
64
78
90
77
70C
72A
56C
V_batt
32
30
22
74C
60C
62C
72C
68C
S6
70B
74B
60B
62B
72B
68B
S4
70A
74A
60A
62A
72A
68A
S2
24
S5
S3
S1
56B
56A
58C
58B
58A
54

FIG. 6

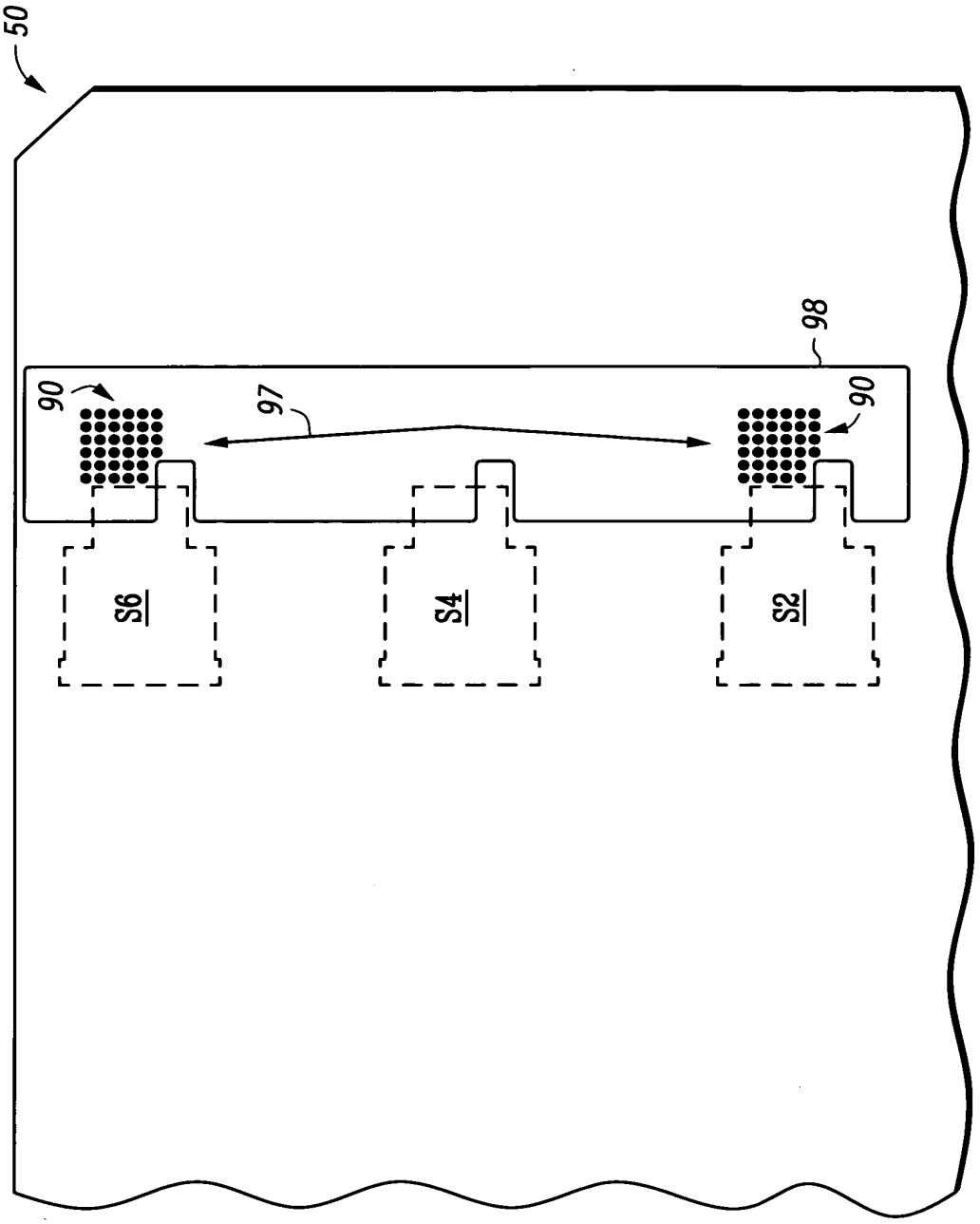

FIG. 7

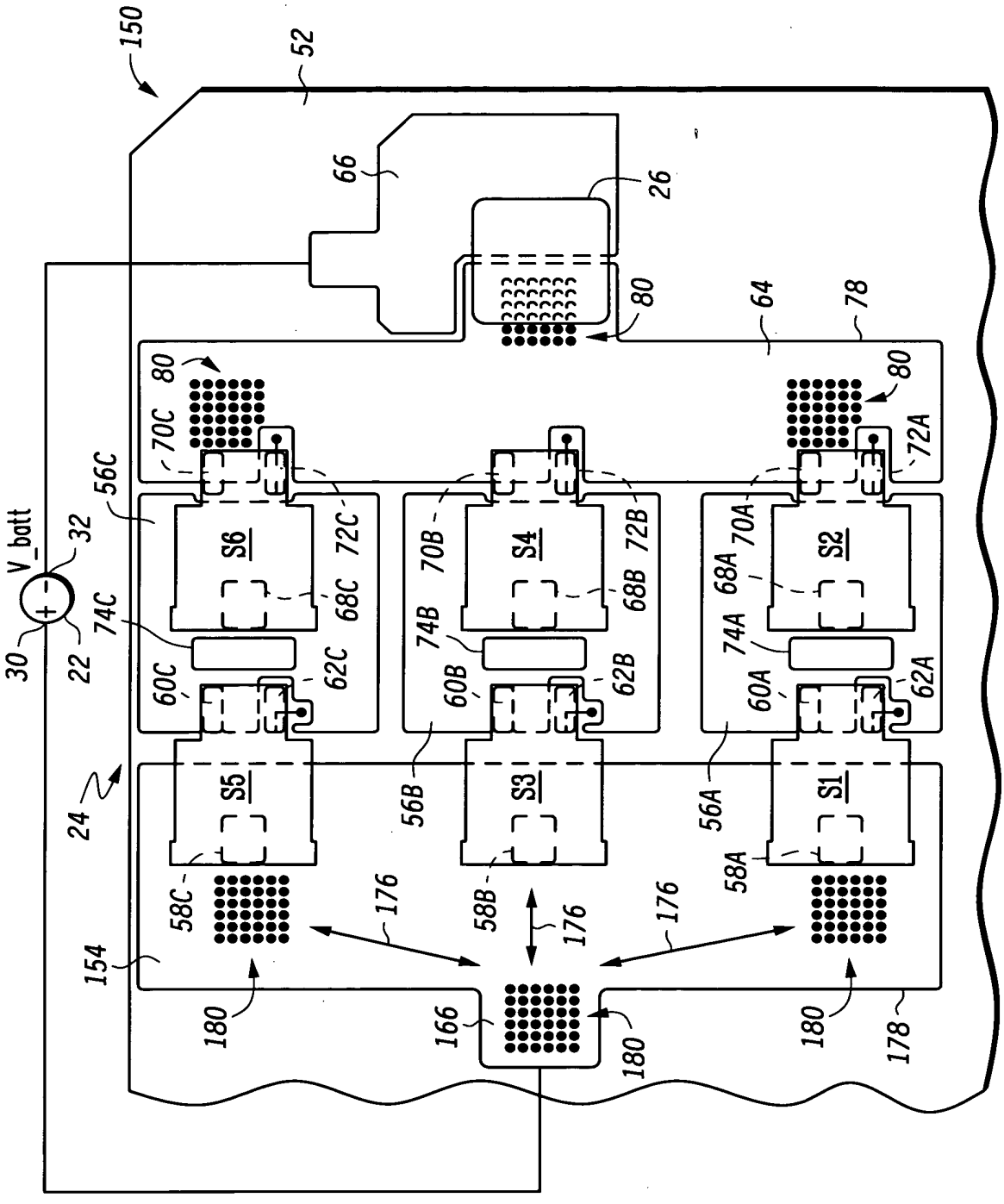
150
52
66
26
80
64
78
80
80
70C
72A
56C
V_batt
32
30
22
74C
S6
72C
68C
70B
S4
72B
68B
70A
S2
68A
74B
74A
60C
62C
60B
62B
60A
62A
24
S5
S3
S1
56B
56A
58C
58B
58A
176
176
176
154
180
166
180
180
178

FIG. 8

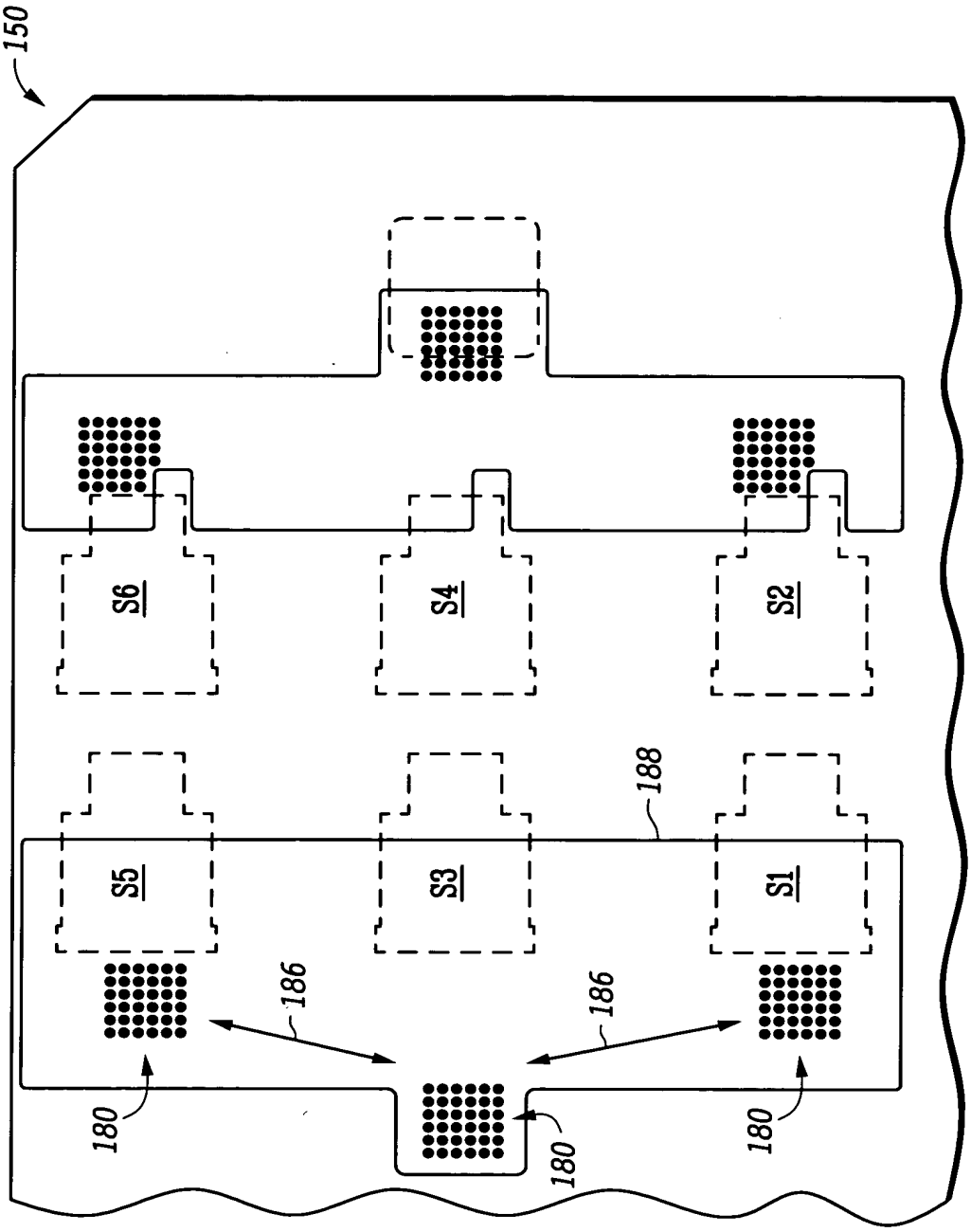

FIG. 9

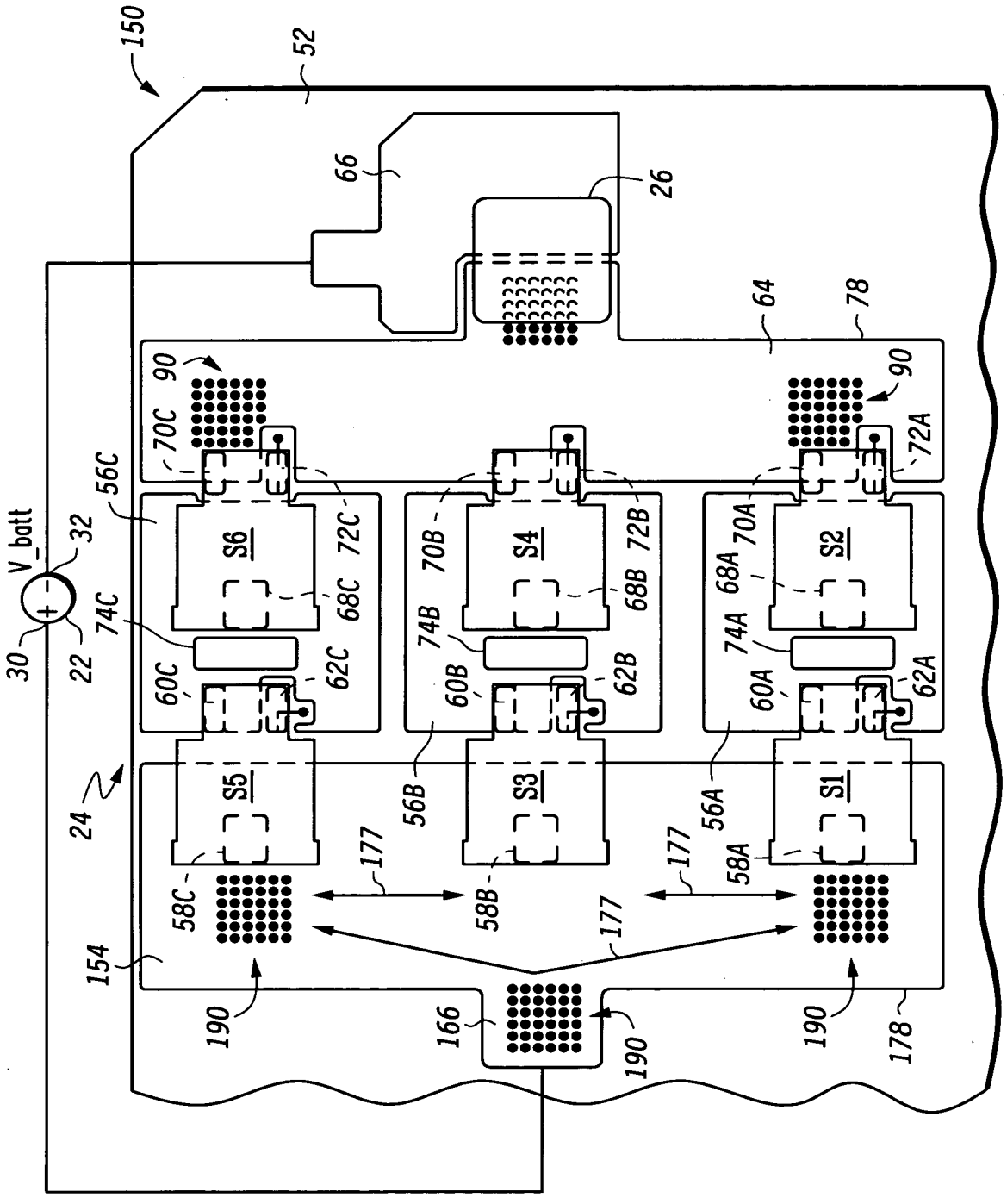
150
52
66
26
64
78
90
90
70C
72A
56C
V_batt
32
30
22
74C
60C
62C
68C
72C
S6
70B
74B
60B
62B
68B
72B
S4
70A
68A
74A
60A
62A
S2
24
S5
S3
S1
56B
56A
177
177
177
58C
58B
58A
154
190
166
190
190
178

FIG. 10

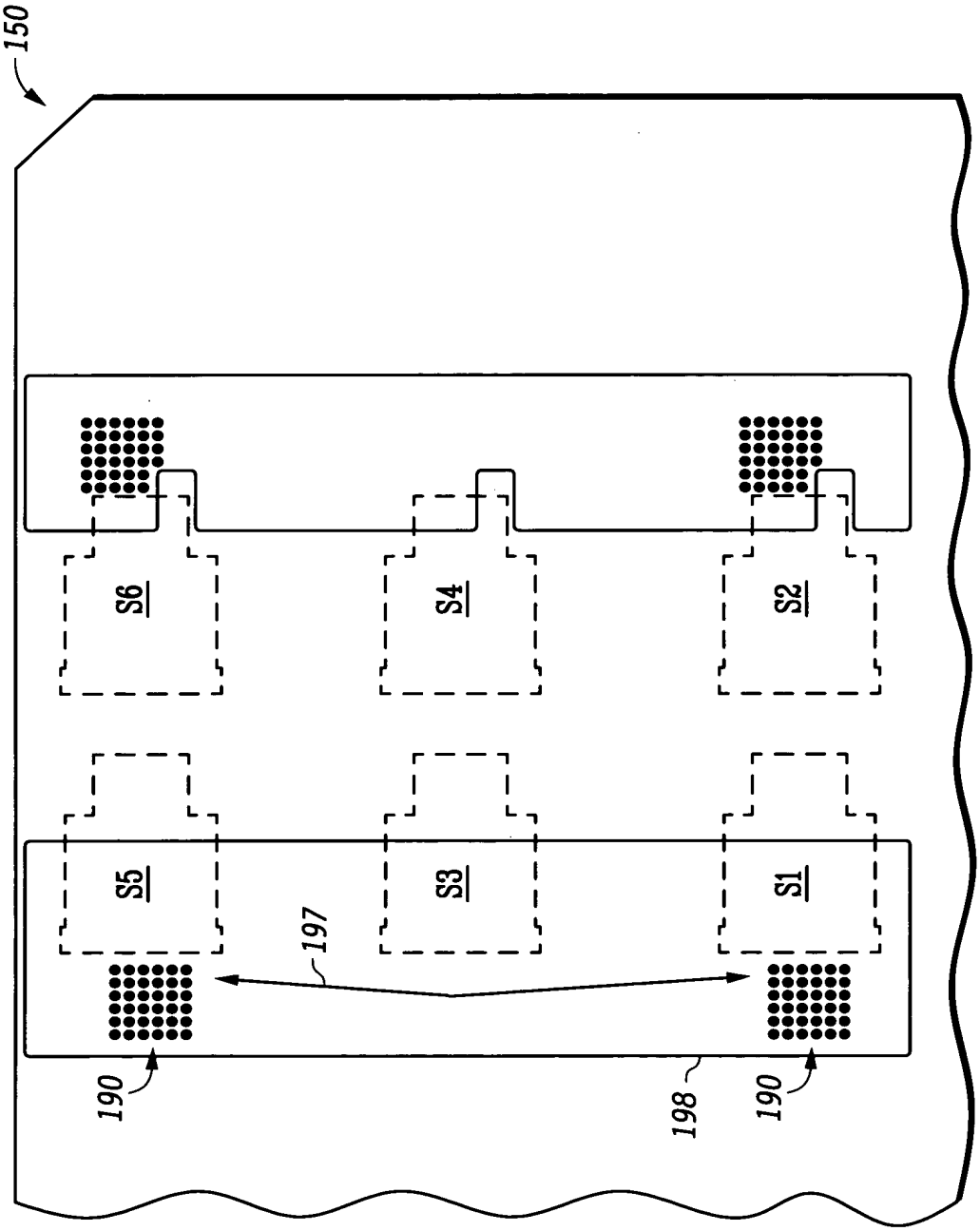

FIG. 11